

Assignment 4 : Q1: Report

Question 2 Segmenting a Brain Magnetic Resonance (MR) Image

All required codes are implemented in “myMainScript.m” located in ‘code’ folder of Question 2.

Reporting

Part a

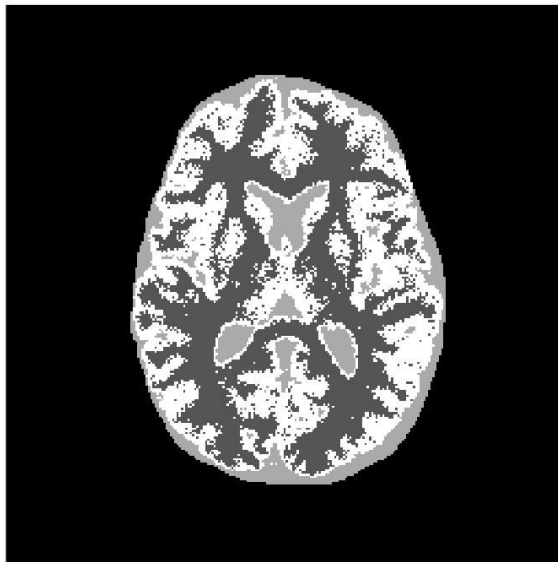
Chosen value of $\beta = 0.8$

Part b

Initial Estimate of label image x :

We have used labelling that is generated by question 1. Each pixel is given the label for which it had maximum membership. This is the best information of segmentation we have at this moment so it is best to start with.

Initial Guess of Labels using question 1



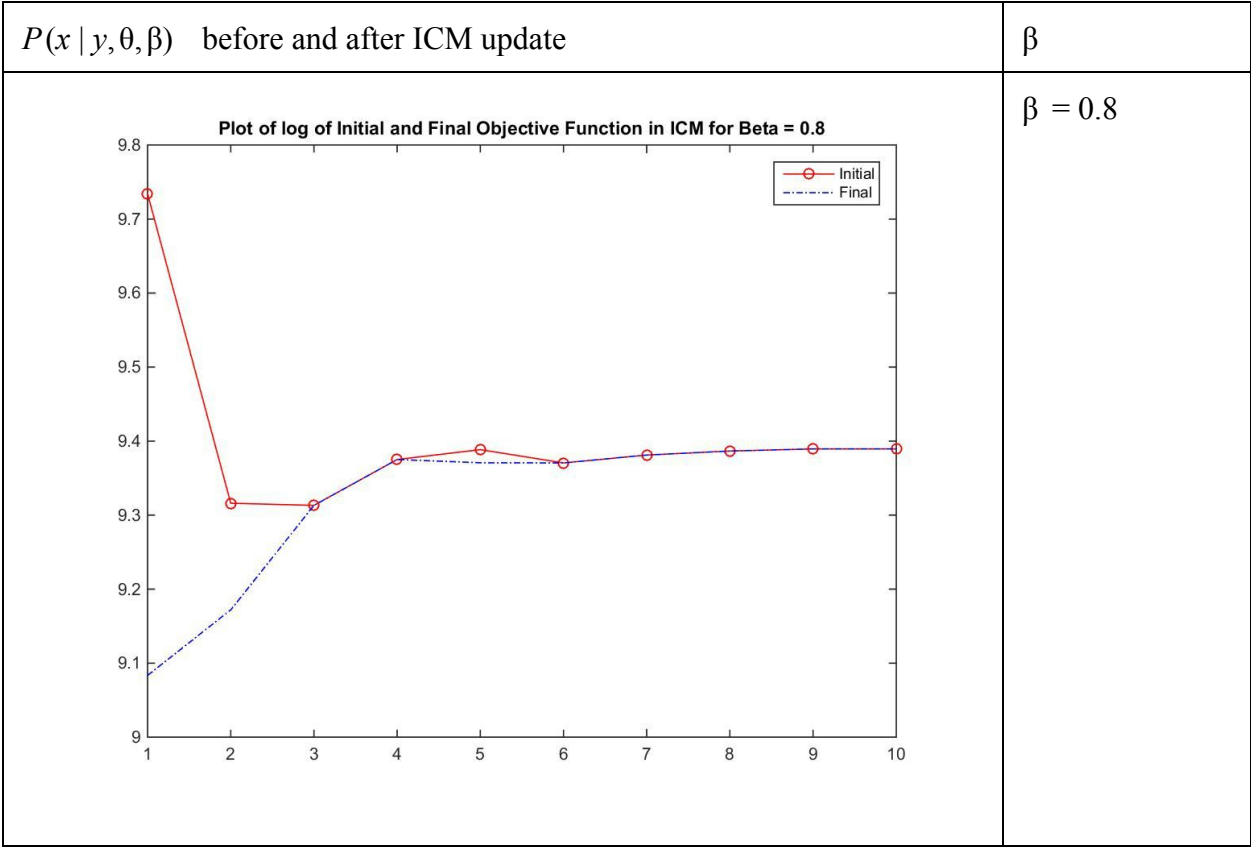
Part c

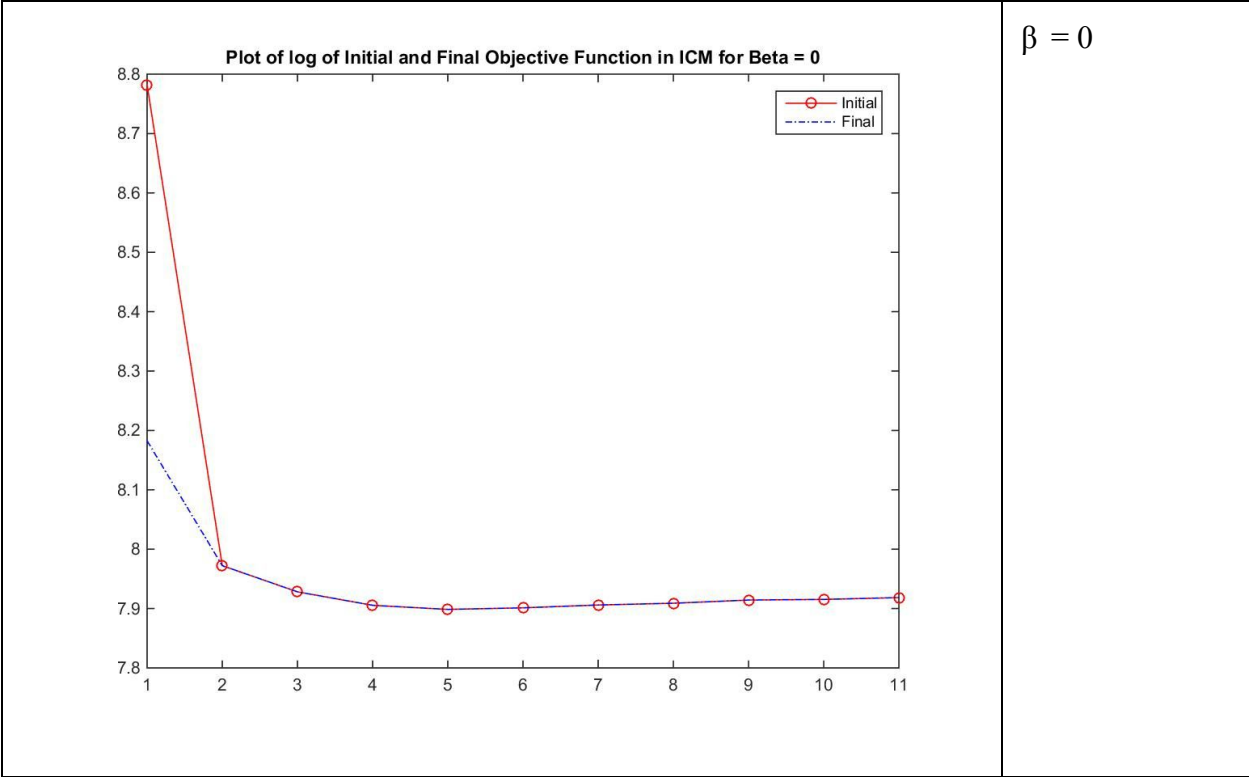
Class Means = [0.25, 0.5, 0.75];

Sigma Squared = [1,1,1]

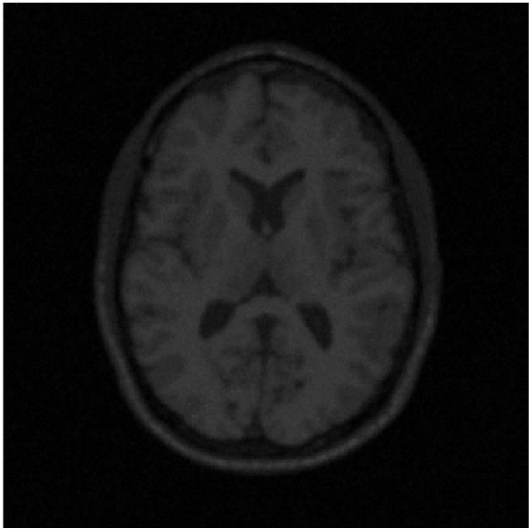
Pixel values of some random set of points are chosen as class means in the hope that they are representative of data, standard deviation are chosen to be as 1,1,1 so as to cover complete range.

Part d





Part e
Optimal Images

Images	Description
<div>Corrupted Image of brain</div> 	Corrupted Image (given input)

Optimal Membership for first class with Beta=0.8



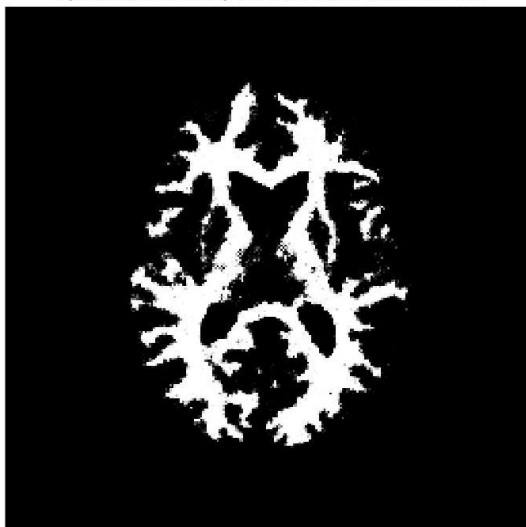
Class 1
Membership for
 $\beta = 0.8$

Optimal Membership for second class with Beta=0.8



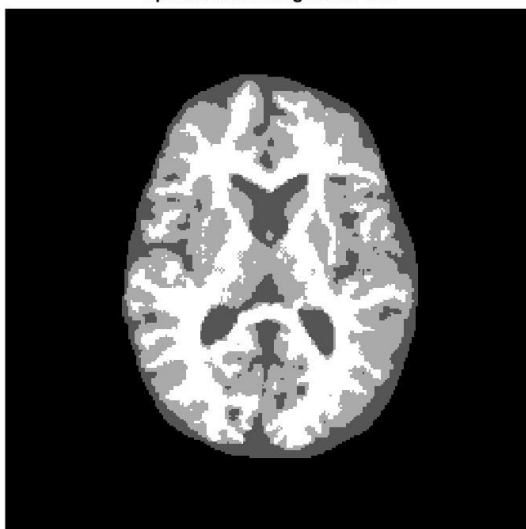
Class 2
Membership for
 $\beta = 0.8$

Optimal Membership for third class with Beta=0.8



Class 3
Membership for
 $\beta = 0.8$

Optimal label image Beta=0.8



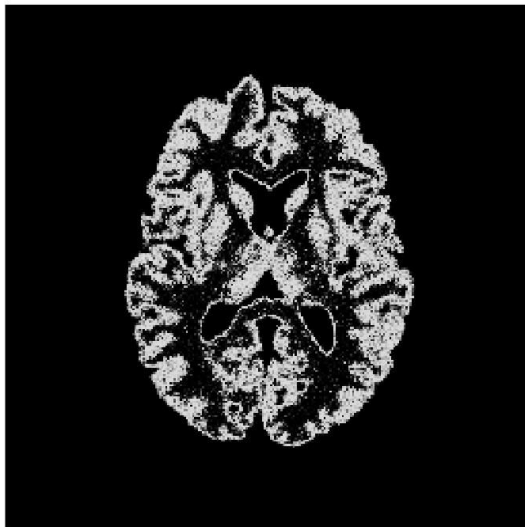
Optimal label
Image for
 $\beta = 0.8$

Membership for first class with Beta=0


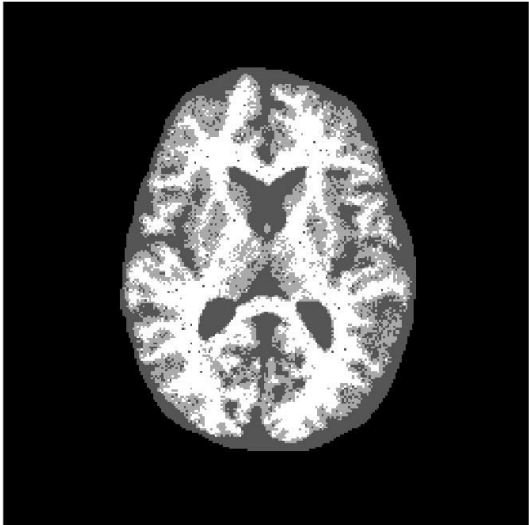


Class 1
Membership for
 $\beta = 0$

Membership for second class with Beta=0



Class 2
Membership for
 $\beta = 0$

<p>Membership for third class with Beta=0</p> 	<p>Class 3 Membership for $\beta = 0.8$</p>
<p>Optimal label image Beta= 0</p> 	<p>Optimal label Image for $\beta = 0$</p>

Part f

Optimal Class means = [0.3126, 0.5303, 0.6378]

Disclaimer

All the above images in high resolution can be located in 'images' folder of corresponding question. White in membership image correspond to high probability and all images are with respect to same colormap.